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EXAMINER	
WON, MICHAEL YOUNG	

ART UNIT	PAPER NUMBER
2155	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/755,479	LEE, WHAY S.	
	Examiner	Art Unit	
	Michael Y Won	2155	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,9-22,24-29,32-42 and 44-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-22,24-29,32-42 and 44-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/16/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 22, and 39 have been amended.

2. Claims 7, 8, 23, 30, 31, and 43 have been cancelled.

3. Claims 53-71 have been added.

4. Claims 1-6, 9-22, 24-29, 32-42, and 44-71 have been examined and are pending with this action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6, 9, 16-22, 24-29, 32, 36-42, 44-46, and 50-52 are rejected under 35 U.S.C. 102(b) as being anticipated by Flaig et al. (US 5,105,424 A).

<u>INDEPENDENT:</u>

As per claim 1, Flaig teaches a method of sending a message in an interconnection fabric, wherein the interconnection fabric couples together a plurality of nodes, wherein each node of the plurality of nodes comprises a plurality of input ports and a plurality of output ports (see abstract and col.1, lines 46-61), comprising: identifying a route in the interconnection fabric for sending the message from a sending

node to a destination node (see col.1, lines 50-61), wherein said identifying a route comprises selecting a routing directive from a routing table comprising a plurality of independent routes (see col.12, lines 34-37) from the sending node to the destination node (see abstract: "at each routing circuit, forming routes to other nodes as a sequence of direction changing and relative address indicators for each node between the starting node and each destination node;... retrieving the route to the destination node from a memory map" and col.6, lines 12-17); encoding (see col.6, lines 14-15) a routing directive in the message, wherein the routing directive describes the route and comprises at least one segment, wherein each segment comprises a direction component (see col.4, lines 55-57) and a distance component (see col.7, lines 27-33 & 41-48); sending the message on one of the output ports of the sending node (see col.4, lines 57-60 and col.7, lines 12-16); receiving the message on one of the input ports of a first node connected to the output port of the sending node (inherent); decrementing the distance component for a current segment of the routing directive (see col.7, lines 50-52); selecting one of the output ports of the first node according to the current segment of the routing directive in the message (see Figs.4-6; col.6, lines 55-57; and col.7, lines 19-27); and sending the message on the selected one of the output ports of the first node (see col.4, lines 57-60 and col.7, line 68 to col.8, line 2).

As per claim 22, Flaig teaches of a node comprising: a routing unit (see col.1, lines 50-61 and col.4, lines 51-52); a plurality of input ports (see Figs.4-6 and col.1, lines 46-55); and a plurality of output ports (see Figs.4-6 and col.1, lines 46-55); wherein the node is configured to be connected to an interconnection fabric, wherein the

interconnection fabric is configured to connect the node to a plurality of nodes (see col.4, lines 51-55); wherein the routing unit is configured to receive a message being sent along a route from a sending node to a destination node in the interconnection fabric (see col.4, lines 55-57 and col.7, lines 33-37); wherein the routing unit is further configured to receive a routing directive encoded (see col.6, lines 14-15) in the message, wherein the routing directive describes the route and comprises at least one segment, and wherein a segment comprises a direction component (see col.4, lines 55-57) and a distance component (see col.7, lines 27-33 & 41-48); wherein the node is configured to receive the message on one of the input ports when the node is not the sending node (see col.4, lines 51-60), wherein the node is further configured to decrement the distance component of a current segment of the routing directive (see col.7, lines 50-52) and to select one of the output ports according to the current segment (see col.4, lines 57-60 and col.7, line 68 to col.8, line 2); wherein the routing unit is configured to identify the route and to encode the routing directive in the message when the node is the sending node, wherein the routing unit is configured to identify the route by selecting the routing directive from a routing table comprising a plurality of independent routes (see col.12, lines 34-37) from the sending node to the destination node, and wherein the node is configured to send the message on one of the output ports (see abstract: "at each routing circuit, forming routes to other nodes as a sequence of direction changing and relative address indicators for each node between the starting node and each destination node;... retrieving the route to the destination

node from a memory map; adding the route to the destination node to the beginning of the message packet as part of a header" and col.6, lines 12-17).

As per claim 39, Flaig teaches of a device comprising: an interface configured to communicate with a source node in an interconnection fabric (see col.4, lines 63-66), wherein the interconnection fabric comprises a plurality of routes between the source node and a destination node (see Fig.8 and col.7, line 41 to col.8, lines 4); and a controller configured to provide a first routing directive describing a first route from the source node to the destination node (see col.4, lines 51-52), wherein the routing directive comprises at least one segment, wherein each segment comprises a distance component (see col.7, lines 27-33 & 41-48) and a direction component (see col.4, lines 55-57), wherein the distance component is configured to be decremented by a receiving node (see col.7, lines 50-52); wherein the controller is further configured to encode (see col.6, lines 14-15) the first routing directive in a message, and to communicate the message to the source node to be sent on the interconnection fabric to the destination node (see col.7, line 41 to col.8, lines 4); and wherein the controller is further configured to maintain a routing table comprising a plurality of independent routes (see col.12, lines 34-37) from the source node to the destination node, and wherein the controller is further configured to select the first routing directive from the routing table (see abstract: "at each routing circuit, forming routes to other nodes as a sequence of direction changing and relative address indicators for each node between the starting node and each destination node;... retrieving the route to the destination node from a memory map" and col.6, lines 12-17).

DEPENDENT:

As per claims 2, 5, and 26, Flaig further teaches wherein said selecting by the node comprises: if, after said decrementing, the distance component for the current segment is greater than zero, selecting the output port corresponding to a same routing direction in which the message was traveling when received; and if, after said decrementing, the distance component for the current segment is zero, selecting the output port corresponding to the direction component of the current segment (see col.3, lines 17-20 and col.7, line 48 to col.8, line 17).

As per claims 3 and 27, Flaig further teaches wherein if, after said decrementing, the distance component for the current segment is zero, and the output port is selected according to the direction component of the current segment, the method further comprises removing by the node the current segment from the routing directive so that a next segment becomes the current segment when the message is sent on the selected output port (see col.3, lines 17-20).

As per claims 4 and 28, Flaig further teaches wherein the routing directive further comprises a pointer to the current segment, and wherein said removing the current segment comprises moving the pointer to the next segment (see col.11, lines 12-13).

As per claim 6, Flaig further teaches wherein the subsequent node selecting a port corresponding to the direction component comprises: selecting the corresponding output port if the direction component for the current segment specifies a routing direction; and selecting a device port if the direction component for the current segment

specifies that the subsequent node is the destination for the message (see col.7, lines 22-25).

As per claims 9 and 32, Flaig further teaches wherein the interconnection fabric is a torus interconnection fabric (see Fig.3 and col.2, lines 57-65).

As per claims 16 and 45, Flaig further teaches wherein a first number of segments of a first routing directive differ from a second number of segments of a second routing directive (see col.4, line 50 to col.5, line 19).

As per claim 17, Flaig teaches of further comprising a subsequent node receiving the message and, if all of the segments of the routing directive have been removed, the subsequent node identifying itself as the destination node and selecting a device port (see col.5, lines 2-8).

As per claim 18, Flaig further teaches wherein each direction component comprises a direction relative to a routing direction the message was traveling in when received (see col.4, lines 50-62).

As per claim 19, Flaig further teaches wherein each direction component comprises an identifier of one of the output ports of one of the nodes (see col.1, lines 57-59).

As per claims 20, 21, 37, 38, and 42, Flaig further teaches wherein the destination node is configured to communicate with a storage device comprising a disk drive (see col.5, lines 6-8).

As per claim 24, Flaig further teaches wherein the node is configured to communicate with a device on a device port, wherein the device is configured to select

a route, encode a routing directive in the message and communicate the message to the node on the device port when the node is the sending node (see abstract).

As per claim 25, Flaig further teaches wherein the node is further configured to select one of the output ports according to the current segment (see col.5, lines 58-62).

As per claim 29, Flaig further teaches wherein the node is configure to select: one of the output ports corresponding to a same routing direction in which the message was traveling when received if, after said decrementing, the distance component for the current segment is greater than zero; one of the output ports corresponding to the direction component of the current segment if, after said decrementing, the distance component for the current segment is zero, and if the direction component for the current segment does not identify that the node is the destination node; and a device port if, after said decrementing, the distance component for the current segment is zero and if the direction component for the current segment identifies that the node is the destination node (see claim 17 and 26 rejection above).

As per claims 36 and 40, Flaig further teaches wherein the node is configured to communicate with a controller that is a RAID controller (see col.8, lines 15-17).

As per claim 41, Flaig further teaches wherein the controller comprises a host interface configured to communicate with a host computer (see col.4, lines 45-49).

As per claim 44, Flaig further teaches wherein the routing table further comprises a second routing directive describing a second route from the source node to the destination node (see col.7, lines 16-25).

As per claim 46, Flaig further teaches wherein the controller is further configured to calculate the first routing directive (see col.4, lines 46-62).

As per claim 50, Flaig further teaches wherein the controller is further configured to encode a return routing direction describing a return route from the destination node to the source node in the message, and wherein the return routing directive is configured to be incrementally added to, as the message is routed to the destination node (see col.4, lines 46-62).

As per claim 51, Flaig further teaches wherein the return routing directive is further configured to return an error message to the source node if a routing error is encountered (see col.9, lines 57-62).

As per claim 52, Flaig further teaches wherein the controller is further configured to use the incrementally created return routing directive to locate the routing error if an error message is returned, wherein the incrementally created return routing directive indicates a last node that successfully received the message (see col.9, lines 57-62).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 10-15, 33-35, 47-49, 53, 59, 61-64, and 66-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flaig et al. (US 5,105,424 A) in view of Walker et al. (US 5,613,069 A).

INDEPENDENT:

As per claim 53, Flaig teaches a method of sending a message in an interconnection fabric, wherein the interconnection fabric couples together a plurality of nodes, wherein each node of the plurality of nodes comprises a plurality of input ports and a plurality of output ports (see abstract and col.1, lines 46-61), comprising: identifying a route in the interconnection fabric for sending the message from a sending node to a destination node (see col.1, lines 50-61); encoding (see col.6, lines 14-15) a routing directive in the message, wherein the routing directive describes the route and comprises at least one segment, wherein each segment comprises a direction component (see col.4, lines 55-57) and a distance component (see col.7, lines 27-33 & 41-48); sending the message on one of the output ports of the sending node (see col.4, lines 57-60 and col.7, lines 12-16); receiving the message on one of the input ports of a first node connected to the output port of the sending node (inherent); decrementing the distance component for a current segment of the routing directive (see col.7, lines 50-52); selecting one of the output ports of the first node according to the current segment of the routing directive in the message (see Figs.4-6; col.6, lines 55-57; and col.7, lines 19-27); and sending the message on the selected one of the output ports of the first node (see col.4, lines 57-60 and col.7, line 68 to col.8, line 2).

Flaig does not explicitly teach of identifying a return route from the destination node to the sending node; encoding a return routing directive in the message, wherein the return routing directive describes the return route and comprises at least one segment, wherein each segment comprises a direction component and a distance component. Walker teaches of identifying a return route from the destination node to the sending node (see col.29, lines 40-49); encoding a return routing directive in the message, wherein the return routing directive describes the return route and comprises at least one segment (see col.5, lines 20-26; col.7, lines 2-5; and col.8, lines 15-23), wherein each segment comprises a direction component and a distance component (inherent as applied to Flaig reference). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Walker within the method of sending a message in an interconnection fabric because such implementation allows the destination node to return messages back to the source node. Messages such as an acknowledgement message taught by Flaig (see col.4, lines 2-5 and col.9, lines 57-66)

As per claim 56, Flaig teaches of a node comprising: a routing unit (see col.1, lines 50-61 and col.4, lines 51-52); a plurality of input ports (see Figs.4-6 and col.1, lines 46-55); and a plurality of output ports (see Figs.4-6 and col.1, lines 46-55); wherein the node is configured to be connected to an interconnection fabric, wherein the interconnection fabric is configured to connect the node to a plurality of nodes (see col.4, lines 51-55); wherein the routing unit is configured to receive a message being sent along a route from a sending node to a destination node in the interconnection

fabric (see col.4, lines 55-57 and col.7, lines 33-37); wherein the routing unit is further configured to receive a routing directive encoded (see col.6, lines 14-15) in the message, wherein the routing directive describes the route and comprises at least one segment, and wherein a segment comprises a direction component (see col.4, lines 55-57) and a distance component (see col.7, lines 27-33 & 41-48); and wherein the node is configured to receive the message on one of the input ports when the node is not the sending node (see col.4, lines 51-60), wherein the node is further configured to decrement the distance component of a current segment of the routing directive (see col.7, lines 50-52) and to select one of the output ports according to the current segment (see col.4, lines 57-60 and col.7, line 68 to col.8, line 2).

Flaig does not explicitly teach wherein, when the node is the sending node, the routing unit is further configured to identify a return route from the destination node to the sending node and to encode a return routing directive in the message, wherein the return routing directive describes the return route and comprises at least one segment, wherein each segment comprises a direction component and a distance component (see claim 53 rejection above).

As per claim 59, Flaig teaches of a device comprising: an interface configured to communicate with a source node in an interconnection fabric (see col.4, lines 63-66), wherein the interconnection fabric comprises a plurality of routes between the source node and a destination node (see Fig.8 and col.7, line 41 to col.8, lines 4); and a controller configured to provide a first routing directive describing a first route from the source node to the destination node (see col.4, lines 51-52), wherein the routing

directive comprises at least one segment, wherein each segment comprises a distance component (see col.7, lines 27-33 & 41-48) and a direction component (see col.4, lines 55-57), wherein the distance component is configured to be decremented by a receiving node (see col.7, lines 50-52); and wherein the controller is further configured to encode (see col.6, lines 14-15) the first routing directive in a message, and to communicate the message to the source node to be sent on the interconnection fabric to the destination node (see col.7, line 41 to col.8, lines 4).

Flaig does not explicitly teach wherein the controller is further configured to provide a return routing directive describing a return route from the destination node to the source node, wherein the return routing directive comprises at least one segment, wherein each segment comprises a direction component and a distance component; and wherein the controller is further configured to encode the return routing directive in the message (see claim 53 rejection above).

As per claim 63, Flaig teaches a method of sending a message in an interconnection fabric, wherein the interconnection fabric couples together a plurality of nodes, wherein each node of the plurality of nodes comprises a plurality of input ports and a plurality of output ports (see abstract and col.1, lines 46-61), comprising: identifying a route in the interconnection fabric for sending the message from a sending node to a destination node (see col.1, lines 50-61); encoding (see col.6, lines 14-15) a routing directive in the message, wherein the routing directive describes the route and comprises at least one segment, wherein each segment comprises a direction component (see col.4, lines 55-57) and a distance component (see col.7, lines 27-33 &

41-48); sending the message on one of the output ports of the sending node (see col.4, lines 57-60 and col.7, lines 12-16); receiving the message on one of the input ports of a first node connected to the output port of the sending node (inherent); decrementing the distance component for a current segment of the routing directive (see col.7, lines 50-52); selecting one of the output ports of the first node according to the current segment of the routing directive in the message (see Figs.4-6; col.6, lines 55-57; and col.7, lines 19-27); and sending the message on the selected one of the output ports of the first node (see col.4, lines 57-60 and col.7, line 68 to col.8, line 2).

Flaig does not explicitly teach of incrementally encoding a return routing directive in the message, wherein the return routing directive describes a return route from the destination node to the sending node and comprises at least one segment, and wherein each segment comprises a direction component and a distance component (see claim 53 rejection above).

As per claim 66, Flaig teaches of a node comprising: a routing unit (see col.1, lines 50-61 and col.4, lines 51-52); a plurality of input ports (see Figs.4-6 and col.1, lines 46-55); and a plurality of output ports (see Figs.4-6 and col.1, lines 46-55); wherein the node is configured to be connected to an interconnection fabric, wherein the interconnection fabric is configured to connect the node to a plurality of nodes (see col.4, lines 51-55); wherein the routing unit is configured to receive a message being sent along a route from a sending node to a destination node in the interconnection fabric (see col.4, lines 55-57 and col.7, lines 33-37); wherein the routing unit is further configured to receive a routing directive encoded (see col.6, lines 14-15) in the

message, wherein the routing directive describes the route and comprises at least one segment, and wherein a segment comprises a direction component (see col.4, lines 55-57) and a distance component (see col.7, lines 27-33 & 41-48); and wherein the node is configured to receive the message on one of the input ports when the node is not the sending node (see col.4, lines 51-60), wherein the node is further configured to decrement the distance component of a current segment of the routing directive (see col.7, lines 50-52) and to select one of the output ports according to the current segment (see col.4, lines 57-60 and col.7, line 68 to col.8, line 2).

Flaig does not explicitly teach wherein the routing unit is further configured to incrementally encode a return routing directive in the message, wherein the return routing directive describes a return route from the destination node to the sending node and comprises at least one segment, and wherein each segment comprises a direction component and a distance component (see claim 53 rejection above).

As per claim 68, Flaig teaches of a device comprising: an interface configured to communicate with a source node in an interconnection fabric (see col.4, lines 63-66), wherein the interconnection fabric comprises a plurality of routes between the source node and a destination node (see Fig.8 and col.7, line 41 to col.8, lines 4); and a controller configured to provide a first routing directive describing a first route from the source node to the destination node (see col.4, lines 51-52), wherein the routing directive comprises at least one segment, wherein each segment comprises a distance component (see col.7, lines 27-33 & 41-48) and a direction component (see col.4, lines 55-57), wherein the distance component is configured to be decremented by a receiving

node (see col.7, lines 50-52); and wherein the controller is further configured to encode (see col.6, lines 14-15) the first routing directive in a message, and to communicate the message to the source node to be sent on the interconnection fabric to the destination node (see col.7, line 41 to col.8, lines 4).

Flaig does not explicitly teach wherein the controller is further configured to incrementally encode a return routing directive describing a return route from the destination node to the source node in the message, wherein the return routing directive describes a return route from the destination node to the sending node and comprises at least one segment, and wherein each segment comprises a direction component and a distance component, and wherein the return routing directive is configured to be incrementally added to as the message is routed to the destination node (see claim 53 rejection above).

DEPENDENT:

As per claims 10 and 33, Walker teaches of further comprising: if the node is the sending node, identifying a return route from the destination node to the sending node; and encoding a return routing directive in the message, wherein the return routing directive describes the return route and comprises at least one segment, wherein each segment comprises a direction component and a distance component (see claim 53 rejection above).

As per claims 11, 34, and 54, Walker teaches of further comprising if the node is the sending node, the routing unit is further configured to calculate the return routing directive (see claim 53 rejection above).

As per claims 12, 35, 55, and 58, Walker further teaches wherein the interconnection fabric is bi-directional, and wherein calculating the return routing directive comprises reversing the routing directive (see claim 53 rejection above).

As per claim 13 and 47, Walker teaches of further comprising wherein the controller is further configured to incrementally encode a return routing directive in the message, wherein the return routing directive describes a return route from the destination node to the sending node and comprises at least one segment, and wherein each segment comprises a direction component and a distance component (see claim 53 rejection above).

As per claims 14, 64, and 67, Flaig and walker further teaches wherein incrementally encoding comprises: incrementing the distance component for a current segment of the return routing directive; wherein if, after said decrementing, the distance component for the current segment of the routing directive is zero, the method further comprises modifying the direction component of a current segment of the return routing directive and adding a new segment to the return routing directive so that the new segment becomes the current segment of the return routing directive when the message is sent on the selected output port (see col.3, lines 17-20).

As per claims 15 and 65, Flaig and Walker further teaches wherein the return routing directive further comprises a pointer to the current segment, wherein adding a new segment to the return routing directive further comprises moving the pointer to the new segment (see col.11, lines 12-13).

As per claim 48, Flaig and Walker further teaches wherein the controller is further configured to select the return routing directive from a routing table (see col.4, lines 46-62).

As per claims 49 and 61, Flaig and Walker further teaches wherein the controller is further configured to calculate the return routing directive from the first routing directive (see col.4, lines 46-62).

As per claims 62 and 69, Flaig and Walker further teaches wherein the return routing directive is further configured to return an error message to the source node if a routing error is encountered (see col.9, lines 57-62).

As per claim 70, Flaig and Walker further teaches wherein the controller is further configured to use the incrementally created return routing directive to locate the routing error if an error message is returned, wherein the incrementally created return routing directive indicates a last node that successfully received the message (see col.9, lines 57-62).

7. Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Flaig et al. (US 5,105,424 A) in view of Brantley, Jr. et al. (US 4,980,822).

As per claim 71, Flaig teaches of a node comprising: a routing unit (see col.1, lines 50-61 and col.4, lines 51-52); a plurality of input ports (see Figs.4-6 and col.1, lines 46-55); and a plurality of output ports (see Figs.4-6 and col.1, lines 46-55); wherein the routing unit of each node is configured to receive a message being sent along a route from a sending node to a destination node in the interconnection fabric (see col.4, lines

55-57 and col.7, lines 33-37); wherein the routing unit is further configured to receive a routing directive encoded (see col.6, lines 14-15) in the message, wherein the routing directive describes the route and comprises at least one segment, and wherein a segment comprises a direction component (see col.4, lines 55-57) and a distance component (see col.7, lines 27-33 & 41-48); and wherein the node is configured to receive the message on one of the input ports when the node is not the sending node (see col.4, lines 51-60), wherein the node is further configured to decrement the distance component of a current segment of the routing directive (see col.7, lines 50-52) and to select one of the output ports according to the current segment (see col.4, lines 57-60 and col.7, line 68 to col.8, line 2).

Flaig does not explicitly teach that node is a node within a storage system, comprising a plurality of nodes interconnected by an interconnection fabric; wherein different ones of said plurality of nodes perform different functions in the storage system; wherein each one of a first portion of said plurality of nodes is a storage node comprising at least one mass storage device; and wherein each one of a second portion of said plurality of nodes is a host interface node configured to provide an interface for the storage system to a host computer.

Brantley, Jr. teaches of a node within a storage system, comprising a plurality of nodes interconnected by an interconnection fabric (see title and Fig.1); wherein different ones of said plurality of nodes perform different functions in the storage system (subjective); wherein each one of a first portion of said plurality of nodes is a storage node comprising at least one mass storage device (see abstract: "associated memory

module" and Fig.2, #30); and wherein each one of a second portion of said plurality of nodes is a host interface node configured to provide an interface for the storage system to a host computer (see Fig.2, #28 and col.8, lines 38-41). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ the teachings of Flaig with any system whether it is storage, management, or the Internet because such implementation is subjective based on specific need and because such implementation does not patentably distinguish the claimed invention.

Response to Arguments

8. In response to applicant's argument regarding claim 1, that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "selecting the routing directive from a routing table comprising a plurality of independent routes from the sending node to the destination node") does not teach away from the teachings of Flaig et al. (US 5,105,424). Because Flaig teaches of "fixed route" does not negate the above claimed element. Clearly, one of ordinary skill in the art would agree that even the selecting step of a "fixed route" could be selected from "a routing table comprising a plurality of independent routes from the sending node to the destination node". In other words, just because a routing directive is selected from a routing table, which contains a plurality of independent routes from one node to the destination, does not means a route that has been selected cannot be fixed. The teachings of one do not depend on the other. Clearly, it is inherent that when a plurality

of nodes exists (see Fig.8, #10), plurality of independent routes exists from one node to another.

In response to the arguments regarding claims 53, 56 and 59, and claims 63, 66 and 68 with respect to related claims 10 and 13. respectively. The examiner agrees that Flaig does not explicitly teach of a return route or return routing directive, therefore a new reference has been provided Walker et al. (US 5,613,069 A). Walker teaches the missing element of such claims (see rejections above). As such due to an improper rejection of claims 10 and 13 and subsequent similar claims, this action is a supplemental non-final rejection.

In response to the argument regarding claim 71, by employing the teachings of prior art in a system wherein the prior art is set for the purpose of a subjective utility does not patentable distinguish an invention wherein the functional element teaches neither an improvement nor a novel means by which the functionality is achieved. Therefore, claim 71 is rejected in view of Flaig et al. (US 5,105,424 A) and Brantley, Jr. et al. (US 4,980,822).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Y Won whose telephone number is 571-272-3993. The examiner can normally be reached on M-Th: 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Michael Won

March 7, 2005

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER